

In The Claims:

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1. (Currently Amended) A system for speech processing, comprising:  
speech data generated from one or more speech sources;  
an enhanced phone set that includes acoustic-phonetic symbols and  
connectors for extending said enhanced phone set; [and]  
a transcription generated by a transcription process that selects appropriate  
phones from said enhanced phone set to represent said speech data;  
and  
transformation rules applied to said enhanced phone set to produce a  
transformed phone dataset, said transformed phone dataset being used  
in building a phonetic dictionary.
  2. (Original) The system of claim 1, further comprising a phone dataset that  
includes said speech data and said transcription.
  3. (Original) The system of claim 2, wherein said phone dataset is utilized in  
training a speech recognizer.
  4. (Original) The system of claim 2, wherein said phone dataset is utilized in  
building a phonetic dictionary.
  5. (Currently Amended) The system of claim 2, [further comprising] wherein said  
transformation rules are applied to said phone dataset to produce said transformed  
phone dataset, said transformed phone dataset being for use in training a speech  
recognizer.
  6. ~~(Cancelled).~~

7. (Original) The system of claim 1, where said enhanced phone set includes a TIMIT base-phone set and an extended base-phone set.
8. (Currently Amended) The system of claim 7, wherein said extended base-phone set includes base-phones for representing ~~one of~~ a glottal stop variation, a multiple burst release, a fricative consonant closure, a vowel velarization, a vowel lateralization, an R-coloring, a glide loss, an R-deletion, a labio-velar fricative, and an articulator noise.
9. (Previously Presented) The system of claim 7, wherein said enhanced phone set includes said acoustic-phonetic symbols, said acoustic-phonetic symbols being utilized in said transcription process to represent acoustic-phonetic processes of said speech data.
10. (Previously Presented) The system of claim 9, wherein said enhanced phone set further includes said connectors used in said transcription process to connect said acoustic-phonetic symbols to base-phones affected by acoustic-phonetic processes, thereby producing composite-phones.
11. (Original) The system of claim 10, wherein said connectors indicate how and where said acoustic-phonetic processes affect said base-phones.
12. (Original) The system of claim 11, wherein said connectors include a character ">" that is placed to the left of one of said base-phones to indicate that one of said acoustic-phonetic processes affects a beginning of said one of said base-phones.
13. (Original) The system of claim 12, wherein said character ">" is placed to the left of one of said composite-phones to indicate that one of said acoustic-phonetic processes affects a beginning of said one of said composite-phones.

14. (Original) The system of claim 11, wherein said connectors include a character "<" that is placed to the right of one of said base-phones to indicate that one of said acoustic-phonetic processes affects an ending of said one of said base-phones.

15. (Original) The system of claim 14, wherein said character "<" is placed to the right of one of said composite-phones to indicate that one of said acoustic-phonetic processes affects an ending of said one of said composite-phones.

16. (Original) The system of claim 11, wherein said connectors include a character "=" that is placed to the right of one of said base-phones to indicate that one of said acoustic-phonetic processes affects an entirety of said one of said base-phones.

17. (Original) The system of claim 16, wherein said character "=" is placed to the right of one of said composite-phones to indicate that one of said acoustic-phonetic processes affects an entirety of said one of said composite-phones.

18. (Original) The system of claim 11, wherein said connectors include a character "^" that is placed to the right of one of said base-phones to indicate that one of said acoustic-phonetic processes occurred completely within said one of said base-phones.

19. (Original) The system of claim 18, wherein said character "^" is placed to the right of one of said composite-phones to indicate that one of said acoustic-phonetic processes occurred completely within said one of said composite-phones.

20. (Currently Amended) The system of claim 9, wherein said acoustic-phonetic content represented by said acoustic-phonetic symbols includes ~~one of~~ a nasalization, a glottalization variance, a breathiness, a labialization, a palatalization, a voicing, a devoicing, a voiced frication, a low frequency voiceless frication, a high frequency voiceless frication, an epenthetic vowel, a murmur, an air puff, a burst quality, an approximation, an absence of a burst/release, and a tongue click.

21. (Original) The system of claim 5, wherein said transformation rules include merge-type transformation rules that combine two adjacent phones in said phone dataset into a single phone selected from said enhanced phone set.

C/ 22. (Original) The system of claim 5, wherein said transformation rules include split-type transformation rules that separate one phone in said phone dataset into two different phones selected from said enhanced phone set.

23. (Original) The system of claim 5, wherein said transformation rules include replace-type transformation rules that replace one phone in said phone dataset with a different phone selected from said enhanced phone set.

24. (Original) The system of claim 5, wherein said transformation rules include change in context-type transformation rules that change one phone in said phone dataset to a different phone selected from said enhanced phone set depending on context.

25. (Currently Amended) A method for speech processing, comprising the steps of:  
generating speech data from one or more speech sources;  
providing an enhanced phone set that includes acoustic-phonetic symbols and  
connectors for extending said enhanced phone set; [and]  
producing a transcription using a transcription process that selects  
appropriate phones from said enhanced phone set to represent said  
speech data; and  
C1 applying transformation rules to said enhanced phone set to produce a  
transformed phone dataset, said transformed phone dataset being used  
in building a phonetic dictionary.

26. (Original) The method of claim 25, further comprising the step of combining  
said speech data and said transcription to produce a phone dataset.

27. (Original) The method of claim 26, wherein said phone dataset is utilized in  
training a speech recognizer.

28. (Original) The method of claim 26, wherein said phone dataset is utilized in  
building a phonetic dictionary.

29. (Currently Amended) The method of claim 26, further comprising the step  
of applying said transformation rules to said phone dataset to produce said  
transformed phone dataset, said transformed phone dataset being for use in  
training a speech recognizer.

30. (Cancelled).

31. (Original) The method of claim 25, where said enhanced phone set includes a  
TIMIT base-phone set and an extended base-phone set.

32. (Currently Amended) The method of claim 31, wherein said extended base-phone set includes base-phones for representing ~~one of~~ a glottal stop variation, a multiple burst release, a fricative consonant closure, a vowel velarization, a vowel lateralization, an R-coloring, a glide loss, an R-deletion, a labio-velar friacative, and an articulator noise.

33. (Previously Presented) The method of claim 31, wherein said enhanced phone set includes said acoustic-phonetic symbols, said acoustic-phonetic symbols being utilized in said transcription process to represent acoustic-phonetic processes of said speech data.

34. (Previously Presented) The method of claim 33, wherein said enhanced phone set further includes said connectors used in said transcription process to connect said acoustic-phonetic symbols to base-phones affected by acoustic-phonetic processes, thereby producing composite-phones.

35. (Original) The method of claim 34, wherein said connectors indicate how and where said acoustic-phonetic processes affect said base-phones.

36. (Original) The method of claim 35, wherein said connectors include a character ">" that is placed to the left of one of said base-phones to indicate that one of said acoustic-phonetic processes affects a beginning of said one of said base-phones.

37. (Original) The method of claim 36, wherein said character ">" is placed to the left of one of said composite-phones to indicate that one of said acoustic-phonetic processes affects a beginning of said one of said composite-phones.

38. (Original) The method of claim 35, wherein said connectors include a character "<" that is placed to the right of one of said base-phones to indicate that one of said acoustic-phonetic processes affects an ending of said one of said base-phones.

39. (Original) The method of claim 38, wherein said character "<" is placed to the right of one of said composite-phones to indicate that one of said acoustic-phonetic processes affects an ending of said one of said composite-phones.

40. (Original) The method of claim 35, wherein said connectors include a character "=" that is placed to the right of one of said base-phones to indicate that one of said acoustic-phonetic processes affects an entirety of said one of said base-phones.

41. (Original) The method of claim 40, wherein said character "=" is placed to the right of one of said composite-phones to indicate that one of said acoustic-phonetic processes affects an entirety of said one of said composite-phones.

42. (Original) The method of claim 35, wherein said connectors include a character "^" that is placed to the right of one of said base-phones to indicate that one of said acoustic-phonetic processes occurred completely within said one of said base-phones.

43. (Original) The method of claim 42, wherein said character "^" is placed to the right of one of said composite-phones to indicate that one of said acoustic-phonetic processes occurred completely within said one of said composite-phones.

44. (Currently Amended) The method of claim 33, wherein said acoustic-phonetic content represented by said acoustic-phonetic symbols includes ~~one of~~ a nasalization, a glottalization variance, a breathiness, a labialization, a palatalization, a voicing, a devoicing, a voiced frication, a low frequency voiceless frication, a high frequency voiceless frication, an epenthetic vowel, a murmur, an air puff, a burst quality, an approximation, an absence of a burst/release, and a tongue click.

45. (Original) The method of claim 29, wherein said transformation rules include merge-type transformation rules that combine two adjacent phones in said phone dataset into a single phone selected from said enhanced phone set.

C/ 46. (Original) The method of claim 29, wherein said transformation rules include split-type transformation rules that separate one phone in said phone dataset into two different phones selected from said enhanced phone set.

47. (Original) The method of claim 29, wherein said transformation rules include replace-type transformation rules that replace one phone in said phone dataset with a different phone selected from said enhanced phone set.

48. (Original) The method of claim 29, wherein said transformation rules include change in context-type transformation rules that change one phone in said phone dataset to a different phone selected from said enhanced phone set depending on context.

49. (Original) A system for speech processing, comprising:  
means for generating speech data;  
means for providing an enhanced phone set; and  
means for producing a transcription using a transcription process that selects appropriate phones from said enhanced phone set to represent said speech data.



50. (Original) A computer-readable medium comprising program instructions for speech processing, by performing the steps of:

generating speech data from one or more speech sources;  
providing an enhanced phone set; and  
producing a transcription using a transcription process that selects appropriate phones from said enhanced phone set to represent said speech data.

51. (New) A method for speech processing, comprising the steps of:

providing an enhanced phone set that includes enhanced base-phones for representing input speech data, acoustic-phonetic symbols that represent acoustic-phonetic content of said input speech data, and connectors for extending said enhanced base-phones by selectively connecting said acoustic-phonetic symbols to said enhanced base-phones to create composite enhanced phones;  
producing a detailed transcription of said input speech data using a transcription process that selects appropriate phones from said enhanced phone set to represent said input speech data; and  
applying transformation rules to said transcription to produce a transformed transcription, said transformed transcription being used to create a phonetic dictionary for a speech recognition process.

52. (New) The method of claim 51, wherein said enhanced base-phones include glottal stop variation phones qq, qh, qcl, qclq, qqcl, hqq, and hqh, multiple burst releases pp, tt, kk, bb, dd, gg, jhj, and chch, fricative consonant closures fcl, thcl, scl, shcl, vcl, dhcl, zcl, and zhcl, vowel velarizations/lateralizations al, ol, and ul, R-colorings or, ar, and ixr, glide losses ee and oo, R-deletions ax\_, e\_, ix\_, ri, and ra, a labio-velar friacative hw, and articulator noises l#, b#, hh#, w#, g#, ly#, ll#, and lq#.

53. (New) The method of claim 51, wherein said connectors include a character ">" that is placed left of one of said enhanced base-phones to indicate that one of said acoustic-phonetic processes affects a beginning of said one of said enhanced base-phones, said connectors including a character "<" that is placed right of said one of said base-phones to indicate that said one of said acoustic-phonetic processes affects an ending of said one of said enhanced base-phones, said connectors including a character "=" that is placed right of said one of said base-phones to indicate that said one of said acoustic-phonetic processes affects an entirety of said one of said enhanced base-phones, said connectors include a character "^" that is placed right of said one of said base-phones to indicate that said one of said acoustic-phonetic processes occurred completely within said one of said enhanced base-phones.

54. (New) The method of claim 51, wherein said acoustic-phonetic content represented by said acoustic-phonetic symbols includes a nasalization, a plurality of glottalization variances, a breathiness, a labialization, a palatalization, a voicing, a devoicing, a voiced frication, a low frequency voiceless frication, a high frequency voiceless frication, an epenthetic vowel, a murmur, an air puff, a burst quality, an approximation, an absence of a burst/release, and a tongue click.

55. (New) The method of claim 51, wherein said transformation rules include merge-type transformation rules that combine two adjacent phones in said detailed transcription into a single phone selected from said enhanced phone set, said transformation rules including split-type transformation rules that separate a first phone in said detailed transcription into two different phones selected from said enhanced phone set, said transformation rules including replace-type transformation rules that replace a second phone in said detailed transcription with a first different phone selected from said enhanced phone set, said transformation rules including change-in-context transformation rules that change a third phone in said detailed transcription to a second different phone selected from said enhanced phone set depending on a surrounding context of said input speech data.

56. (New) The method of claim 51 wherein at least one of said composite enhanced phones includes a plurality of said connectors that extend a corresponding one of said enhanced base phones with a plurality of said acoustic-phonetic symbols.

57. (New) The method of claim 51 wherein said transformation rules include a first merge rule that merges an original phone bcl and an original phone b into a merged phone b, said transformation rules including a second merge rule that merges an original phone tcl and an original phone t into a merged phone t, said transformation rules including a third merge rule that merges an original phone kcl and an original phone k into a merged phone k.

58. (New) The method of claim 51 wherein said transformation rules include a first split rule that splits an original phone  $em$  into a first split phone  $ah$  and a second split phone  $m$ , said transformation rules including a second split rule that splits an original phone  $or$  into a first split phone  $ao$  and a second split phone  $r$ , said transformation rules including a third split rule that splits an original phone  $al$  into a first split phone  $aa$  and a second split phone  $l$ , said transformation rules including a fourth split rule that splits an original phone  $aa=n$  into a first split phone  $aa$  and a second split phone  $n$ .

59. (New) The method of claim 51 wherein said transformation rules include a first replace rule that replaces an original phone  $gg$  with a replacement phone  $g$ , said transformation rules including a second replace rule that replaces an original phone  $qclq$  with a replacement phone  $q$ , said transformation rules include a third replace rule that replaces an original phone  $p=v$  with a replacement phone  $b$ .

60. (New) The method of claim 51 wherein said transformation rules include a change-in-context rule that replaces an original phone  $aa=n$  with a changed-context phone  $aa < n \text{ } m \text{ } ng$ .

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